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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,620	08/11/2003	Manus P. Henry	02052-079004	2449

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EXAMINER	
BARBEE, MANUEL L	
ART UNIT	**PAPER NUMBER**
2857	

DATE MAILED: 05/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/637,620	HENRY ET AL.	
	Examiner	Art Unit	
	Manuel L. Barbee	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18-20* is/are allowed.

6)☒ Claim(s) *1-17,21,22 and 25-53* is/are rejected.

7)☒ Claim(s) *23 and 24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 2-17, 21, 22, and 25-53 of this application. The provisional application teaches that apparent density drops when fluid flow becomes aerated and the need to adjust drive gain to maintain oscillation. However, the provisional application has no support for a drive gain that is ten times greater than normal drive gain when liquid and gas flow through a conduit, where nominal drive gain is measured during a non-aerated fluid flow at approximately half of the maximum flowrate of the flowmeter, as shown in claim 2. The provisional application does not provide support for specifically changing the drive signal when the apparent density drops by more than ten percent in response to the introduction of gas into the fluid flow, as shown in claim 11. The provisional application does provide disclose specifics of gain ratios for different states of operation or a specific value for the apparent density, as shown in claims 21 and 22. The provisional application does not provide support for specific update rates for the drive gain and measurements made by the control and measurement system, as shown in claims 25, 32, 38 and 47.***Drawings***

2. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 23 and 24 objected to because of the following informalities:

In claim 23, delete "18", and insert --16--.

In claim 24, delete "18", and insert --16--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2-17, 21, 22 and 25-53 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification discusses aeration on pages 68-71. On page 68, the specification teaches that aeration, or the entry of gas into the fluid flow, is detected when the drive gain rises simultaneously with a drop in apparent fluid density. However, there is no specific discussion about how much the gain rises or the relationship between the gain during aeration and a nominal drive gain. Claim 1 has limitations for "maintaining an amplitude of an oscillation of the conduit during a flow of liquid and gas through the conduit when a drive gain applied to the conduit is more than ten times greater than a nominal drive gain, where the nominal drive gain is measured during a non-aerated fluid flow through

the conduit at approximately half of a maximum flowrate of the meter." The specification contains no support for how drive gain during aeration is related to nominal drive gain or how nominal drive gain is obtained. Claims 3-10 are dependent upon claim 11 and incorporate these limitations.

Claim 11 teaches modifying the drive signal to maintain oscillation when an apparent density drops more than ten percent in response to an introduction of gas within the fluid flow. The specification contains no support for using ten percent as the point to modify the drive signal. Claims 12-17 are dependent upon claim 11 and incorporate these limitations.

Claim 21 has limitations for a relationship between a first drive state gain and a second drive state gain, which is not shown in the specification. Claim 22 has limitations for making a transition when the reduction in apparent density is greater than one percent, which is not shown in the specification.

The specification does not teach a specific update rate for the drive gain or for measurements made in the control and measurement system. Claim 25 has limitations for a drive gain update rate that is at least five percent of the drive frequency and for a second sensor detects the introduction of gas comprising less than five percent by total volume of the total fluid flow. Claim 32 has limitations for modifying the drive gain at least once per forty cycles of the oscillation frequency. Claim 38 has limitations for updating the measurement output at least five percent of an oscillation frequency of a conduit. Claim 47 teaches a response time between a change in condition of the fluid flow and a modified measurement output of less than 100 ms. None of these limitations

are shown in the specification. Claims 26-31, 33-37, 39-46 and 48-53 are dependent upon defective independent claims.

Allowable Subject Matter

6. Claims 18-20 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art teaches a method for operating a flowmeter that includes receiving a sensor signal from a sensor connected to vibratable flowtube, processing the sensor signal and determining drive signal characteristics including a drive gain, determining a flow transition characterized by a drive gain rising in conjunction with a drop in apparent density and transitioning the flow meter from a first state of substantially non-aerated fluid flow to a second state of aerated fluid flow.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kalotay (US Patent No. 5,321,991) teaches a coriolis mass flowmeter that has a control system that changes drive gain in response to changes in fluid density.

Dutton et al. (US Patent No. 6,318,156) teach a multiphase flow measurement system.

Smith et al. (US Patent No. 6,318,186) teach drive control in a coriolis flowmeter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mlb

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